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EXAMINER	
NGUYEN, HUY TRAM	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,161	LEFFER, HANS GEORG	
	Examiner	Art Unit	
	HUY-TRAM NGUYEN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 9-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 9-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 18, 2009 has been entered.

Response to Arguments

2. Applicant's arguments filed on February 18, 2009 have been fully considered but they are not persuasive.

3. Applicant argues that "Owen is directed to a system for sequentially rotating a system of three or more reactors to allow the most fresh, or newly generated, catalyst to be in the last process flow position and the least active, or most aged, catalyst to be in the first position, with one reactor in the regeneration mode. Thus, Owen describes a process in which one of the reactor is always in the regeneration mode and the other reactors are operated in series…". Examiner disagrees with this assessment because the system of Owen is capable of performing the instant application process wherein the reactants enter the reactors ((10), (20), (30), and (40)) in parallel through the reactor feed header (51) and discharge through the reactor effluent header (121). The reactors

((10), (20), (30), and (40)) of Owen are single unit operated reactors in which each individual, separated reactor ((10), (20), (30), or (40)) is operated together in parallel.

4. Applicant also argues that Haag does not disclose a system having two or more single unit operated reactors. Examiner agrees with this assessment, but notes that in the Office Action, claim 9 was rejected under 35 USC 35 103 (a) as being unpatentable over Haag et al. in view of the apparatus of Owen. Haag et al. discloses a process for the preparation of hydrocarbon by reaction of carbon monoxide and hydrogen in the presence of a catalyst at elevated temperature and pressure. It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the process of Haag et al. using the multi-reactor system as taught by Owen et al. since Owen et al. states at Column 1, Lines 28-41 that such a modification would be more economical than one very large reactor.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by **Owen et al. (US Patent No. 4,789,528).**

Regarding Claim 1, Owen et al. reference discloses a reactor system suitable for carrying out chemical reactions comprising one or more common reactant feed lines **(Figure 1, numeral 45 – feed and 51 – reactor feed header)** fed into two or more single unit operated reactors **(Figure 1, numerals 10, 20, 30 and 40)** having one or more common product discharge lines **(Figure 1, numeral 39 - reactor effluent)**, wherein each reactor comprises an a separated individual reactor **(Figure 1, numerals 10, 20, 30 and 40)**.

Regarding Claim 2, Owen et al. reference discloses the reactor system of claim 1 comprising between 3 and 8 single unit operated reactors **(Figure 1, numerals 10, 20, 30 and 40)**.

Regarding Claim 3, Owen et al. reference discloses the reactor system of claim 1, in which each reactor section comprises one or more catalyst beds **(Column 1, Lines 28-32 and 48-51).**

Regarding Claim 4, Owen et al. reference discloses the reactor system of claim 1, in which each of the reactors comprises an indirect heat exchange system, which heat exchange systems are jointly operated **(Figure 1, numerals 19, 17, 15 and 29 and Column 3, Line 67-Column 4, Line 25).**

Regarding Claim 5, Owen et al. reference discloses the reactor system of claims 1 comprising one common feed line **(Figure 1, numeral 51 – reactor feed header – gas reactant is intended use of the apparatus).**

Regarding Claim 6, Owen et al. reference discloses the reactor system of claims 1 comprising one common discharge line **(Figure 1, numeral 39 – reactor effluent - gas product is intended use of the apparatus).**

Regarding Claim 7, Owen et al. reference discloses the reactor system of claim 1 comprising one common reactant discharge line or which system comprises one common product discharge line **(Figure 1, numerals 39 and 51 – liquid reactant and product are the intended use of the apparatus).**

Regarding Claim 10, Owen et al. reference discloses the reactor system of claim 1 comprising four single unit operated reactors **(Figure 1, numerals 10, 20, 30 and 40).**

Regarding Claim 13, Owen et al. reference discloses the reactor system of claim 1 comprising one common product discharge line **(Figure 1, numeral 39 – reactor effluent - liquid product is intended use of the apparatus).**

3. Claims 1-2, 4-7, 10 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by **Ramos et al. (US Patent No. 4,152,139).**

Regarding Claim 1, Ramos et al. reference discloses a reactor system suitable for carrying out chemical reactions comprising one or more common reactant feed lines **(Figure 1, numerals 18 and 22)** fed into two or more single unit operated reactors **(Figure 1, numerals 10, 12, 14 and 16)** having one or more common product discharge lines **(Figure 1, numeral 132)**, wherein each reactor comprises an a separated individual reactor **(Figure 1, numerals 10, 12, 14 and 16)**.

Regarding Claim 2, Ramos et al. reference discloses the reactor system of claim 1 comprising between 3 and 8 single unit operated reactors **(Figure 1, numerals 10, 12, 14 and 16)**.

Regarding Claim 4, Ramos et al. reference discloses the reactor system of claim 1, in which each of the reactors comprises an indirect heat exchange system, which heat exchange systems are jointly operated **(Figure 1, numerals 42, 82, 104, and 124).**

Regarding Claim 5, Ramos et al. reference discloses the reactor system of claims 1 comprising one common feed line **(Figure 1, 22 – gas reactant is intended use of the apparatus).**

Regarding Claim 6, Ramos et al. reference discloses the reactor system of claims 1 comprising one common discharge line **(Figure 1, numeral 132 - gas product is intended use of the apparatus).**

Regarding Claim 7, Ramos et al. reference discloses the reactor system of claim 1 comprising one common reactant discharge line or which system comprises one common product discharge line **(Figure 1, numerals 22 and 132 – liquid reactant and product are the intended use of the apparatus).**

Regarding Claim 10, Ramos et al. reference discloses the reactor system of claim 1 comprising four single unit operated reactors **(Figure 1, numerals 10, 12, 14 and 16).**

Regarding Claim 13, Ramos et al. reference discloses the reactor system of claim 1 comprising one common product discharge line **(Figure 1, numeral 123 - liquid product is intended use of the apparatus).**

4. Claims 1, 5-7, 9, and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by **Zhang et al. (US 2003/0114543 A1).**

Regarding Claim 1, Zhang et al. reference discloses a reactor system suitable for carrying out chemical reactions comprising one or more common reactant feed lines **(Figure 6, section 510 – reactant line)** fed into two or more single unit operated reactors **(Figure 6, numerals 512 and 514)** having one or more common product discharge lines **(Figure 6, section 510 – discharge line)**, wherein each reactor comprises an a separated individual reactor **(Figure 1, numerals 512 and 514)**.

Regarding Claim 5, Zhang et al. reference discloses the reactor system of claim 1 comprising one common feed line **(Figure 6, section 510 – reactant line – gas reactant is intended use of the apparatus).**

Regarding Claim 6, Zhang et al. reference discloses the reactor system of claim 1 comprising one common discharge line **(Figure 6, section 510 – discharge line - gas product is intended use of the apparatus).**

Regarding Claim 7, Zhang et al. reference discloses the reactor system of claim 1 comprising one common reactant discharge line or which system comprises one common product discharge line **(Figure 1, section 510 – liquid reactant and product are the intended use of the apparatus).**

Regarding Claim 9, Zhang et al. reference discloses a process for the preparation of hydrocarbons by reaction of carbon monoxide and hydrogen in the presence of a catalyst at elevated temperature and pressure, wherein the process is performed in a reactor system comprising one or more common reactant feed lines fed

into two or more single unit operated reactors sections having one or more common product discharge lines, wherein each reactor section comprises an a separated, individual reactor **(Figure 6, section 510 and Page 3, Paragraphs [0035]& [0037]).**

Regarding Claim 13, Zhang et al. reference discloses the reactor system of claim 1 comprising one common product discharge line **(Figure 1, section 510 - liquid product is intended use of the apparatus).**

Regarding Claim 14, Zhang et al. reference discloses the process of claim 9, wherein the catalyst comprises a cobalt catalyst **(Page 3, Paragraph [0031]).**

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Haag et al. (US Patent No. 4,279,830) in view of Owen et al. (US Patent No. 4,789,528).**

Regarding Claim 9, Haag et al. reference discloses a process for the preparation of hydrocarbons by reaction of carbon monoxide and hydrogen in the presence of a catalyst at elevated temperature and pressure (Abstract). However, Haag et al. does not disclose that the process is performed in a reactor system comprising one or more common reactant feed lines fed into two or more single unit operated reactors having one or more common product discharge lines, wherein each reactor comprises a separated individual reactor. Owen et al. reference discloses a multi-reactor hydrocarbon catalytic conversion system including at least three reactors having one or more common product discharge and each reactor comprising a separated individual reactor **(Abstract and Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multi-reactor system as taught by Owen et al., since Owen et al. states at Column 1, Lines 28-41 that such a modification would be more economical than one very large reactor.

Regarding Claim 14, Haag et al. and Owen et al. references disclose the process of claim 9, wherein the catalyst comprises a cobalt catalyst **(Haag et al. – Column 1, Lines 39-42).**

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Owen et al. (US Patent No. 4,789,528) in view of Kao et al. (US Patent No. 5,266,281).**

Regarding Claim 11, Owen et al. reference discloses the reactor system of claim 1 except for each reactor comprises a multitubular fixed bed catalyst arrangement. Kao et al. reference discloses a catalytic reactor comprising a multitubular fixed bed catalyst arrangement **(Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multitubular fixed bed catalyst as taught by Kao et al., since Kao et al. states at Abstract that such a modification would produce high purity products due to the improvement in thermal exchange.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Owen et al. (US Patent No. 4,789,528) in view of Cachera et al. (US Patent No. 3,968,653).**

Regarding Claim 12, Owen et al. reference discloses the reactor system of claim 4 except for the heat exchange system comprises a thermosiphon system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thermosiphon heat exchange system as taught by Cachera et al., since Cachera et al. states at Column 1, Lines 62-68 that such a modification would provide a fair degree of reliance on natural circulation of the primary cooling medium by thermosiphon.

10. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Haag et al. (US Patent No. 4,279,830) in view of Ramos et al. (US Patent No. 4,152,139).**

Regarding Claim 9, Haag et al. reference discloses a process for the preparation of hydrocarbons by reaction of carbon monoxide and hydrogen in the presence of a catalyst at elevated temperature and pressure **(Abstract)**. However, Haag et al. does

not disclose that the process is performed in a reactor system comprising one or more common reactant feed lines fed into two or more single unit operated reactors having one or more common product discharge lines, wherein each reactor comprises a separated individual reactor. Ramos et al. reference discloses a multi-reactor hydrocarbon catalytic conversion system including at least three reactors having one or more common product discharge and each reactor comprising a separated individual reactor **(Abstract and Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multi-reactor system as taught by Ramos et al., since Ramos et al. states at **Abstract** that such a modification would improve the production.

Regarding Claim 14, Haag et al. and Ramos et al. references disclose the process of claim 9, wherein the catalyst comprises a cobalt catalyst **(Haag et al. – Column 1, Lines 39-42).**

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ramos et al. (US Patent No. 4,152,139) in view of Kao et al. (US Patent No. 5,266,281).**

Regarding Claim 11, Ramos et al. reference discloses the reactor system of claim 1 except for each reactor comprises a multitubular fixed bed catalyst arrangement. Kao et al. reference discloses a catalytic reactor comprising a multitubular fixed bed catalyst arrangement **(Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multitubular fixed bed catalyst as taught by Kao et al., since Kao et al. states at Abstract that such a

modification would produce high purity products due to the improvement in thermal exchange.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Ramos et al. (US Patent No. 4,152,139) in view of Cachera et al. (US Patent No. 3,968,653).**

Regarding Claim 12, Ramos et al. reference discloses the reactor system of claim 4 except for the heat exchange system comprises a thermosiphon system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thermosiphon heat exchange system as taught by Cachera et al., since Cachera et al. states at Column 1, Lines 62-68 that such a modification would provide a fair degree of reliance on natural circulation of the primary cooling medium by thermosiphon.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang et al. (US 2003/0114543 A1) in view of Kao et al. (US Patent No. 5,266,281).**

Regarding Claim 11, Zhang et al. reference discloses the reactor system of claim 1 except for each reactor comprises a multitubular fixed bed catalyst arrangement. Kao et al. reference discloses a catalytic reactor comprising a multitubular fixed bed catalyst arrangement **(Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multitubular fixed bed catalyst as taught by Kao et al., since Kao et al. states at Abstract that such a modification would produce high purity products due to the improvement in thermal exchange.

14. Claims 2, 3, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang et al. (US 2003/0114543 A1) in view of Ramos et al. (US Patent No. 4,152,139).**

Regarding Claim 2, Zhang et al. reference discloses the reactor system of claim 1. However, the system of Zhang et al. also discloses two single unit operated reactors while Claim 2 recites between 3 and 8 single unit operated reactors (Figure 1). Ramos et al. reference discloses the similar system having 4 unit operated reactors. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Zhang et al. with the four unit operated reactors as taught by Ramos et al., since Ramos et al. states at **Abstract** that such a modification would improve the production.

Regarding Claim 3, Zhang et al. reference discloses the reactor system of claim 1 except for each reactor comprises one or more catalyst beds. Ramos et al. reference discloses the similar system using fixed catalyst bed instead of fluid bed of Zhang et al. .It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Zhang et al. with the fixed catalyst beds as taught by Ramos et al., since Zhang et al. states at **Page 1, Paragraph [0007]** that the Fischer-Tropsch synthesis was originally carried out in packed bed reactor.

Regarding Claim 10, Zhang et al. reference discloses the reactor system of claim 1 except for four single unit operated reactors. Ramos et al. reference discloses the similar system having 4 unit operated reactors **(Figure 1, numerals 10, 12, 14 and 16).** It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the system of Zhang et al. with the four unit operated reactors as taught by Ramos et al., since Ramos et al. states at **Abstract** that such a modification would improve the production.

15. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Zhang et al. (US 2003/0114543 A1) in view of Ramos et al. (US Patent No. 4,152,139) and Cachera et al. (US Patent No. 3,968,653).**

Regarding Claim 12, Zhang et al. and Ramos et al. references disclose the reactor system of claim 4 except for the heat exchange system comprises a thermosiphon system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thermosiphon heat exchange system as taught by Cachera et al., since Cachera et al. states at Column 1, Lines 62-68 that such a modification would provide a fair degree of reliance on natural circulation of the primary cooling medium by thermosiphon.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY-TRAM NGUYEN whose telephone number is (571)270-3167. The examiner can normally be reached on MON- THURS: 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HTN
3/9/09

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797